

# REPLICA

**Hidden Activity Signal and Trajectory  
Anomaly Characterization (HAYSTAC)  
Proposers' Day**

**Lightning Talk**

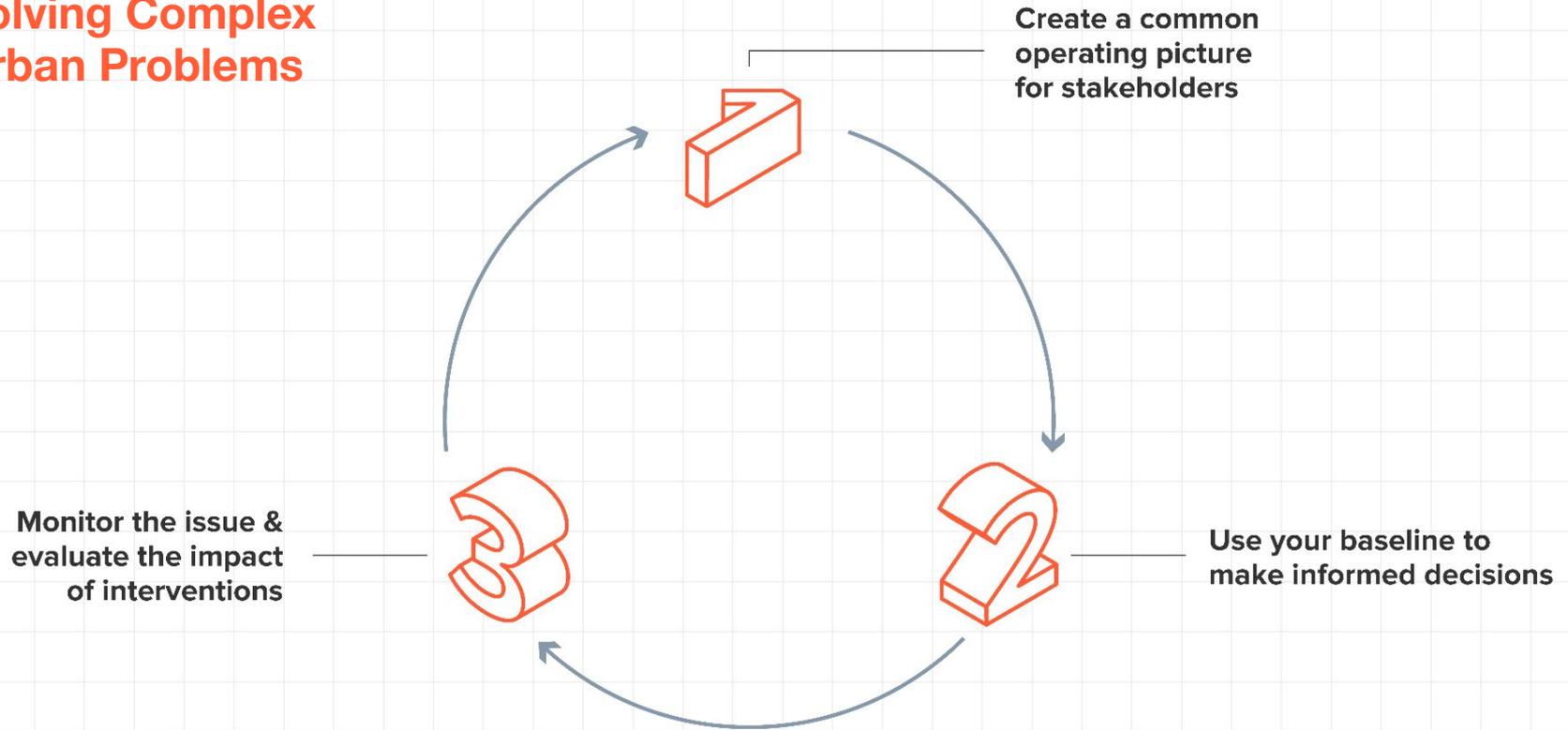
**Replica is a data platform for the built environment — anchored on large-scale simulations.**

Our mission is to organize the world's information about the built environment and make it accessible, valuable, and actionable.

Our platform enables agencies to harness near real-time data – while maintaining privacy – to uncover insights about people, mobility, the built environment, and all the relationships in between.



# Solving Complex Urban Problems



## About Replica

# How It Works

Replica generates its data by running large-scale, computationally intensive **simulations**.

These simulations allow us to deliver granular data outputs that match behavior in aggregate, but don't surface the actual movements (or compromise the privacy) of any one individual.

### Raw Data Inputs



Census Data



Consumer Marketing Data



Geo & Land Use Data



Mobile Location Data



Credit Transaction Data

### Integrated Pipeline

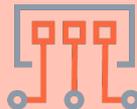
1

Create a **synthetic population** that matches the characteristics of a given region



2

Train a number of **behavior models specific to that region**



3

Run simulations of those **models applied to the synthetic population** to create a "replica" of movement



4

**Calibrate the outputs** of the model against observed "ground-truth" to improve quality



## Case Study:

### *Evaluating the impacts of a congestion fee*

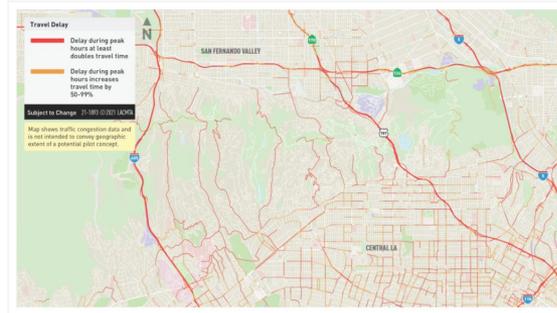
## LA Metro

**Challenge:** LA Metro is studying the impacts and feasibility of a pilot congestion pricing program in four concept areas; both road tolls and cordon pricing are being evaluated; equity is a top priority

**Solution:** Create a common operating picture, monitor with near real-time data, and evaluate the impact of interventions.

## Freeway tolling scheme

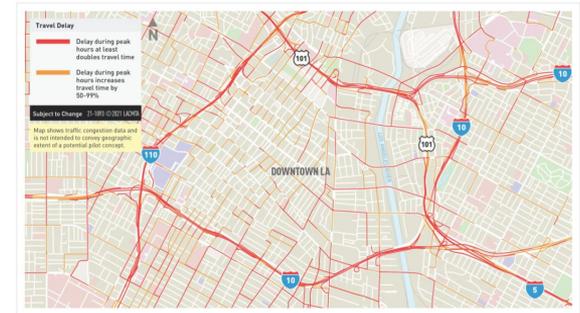
Concept 1A: Santa Monica Mountains Corridor



Initial Concept Evaluation: Explore reducing traffic crossing the Santa Monica Mountains through pricing on the 405, 101, 5 and other parallel roadways.

## Cordon area pricing scheme

Concept 3: Downtown LA Cordon



Initial Concept Evaluation: Explore applying pricing to surface streets in an area of Downtown LA bound by several of the most congested freeways in our region.

## Replica includes

- **Comprehensive mobility data.** Trip-level data, including: mode, purpose, origin, destination, distance, duration, times, and complete routing information.
- **Demographic data about trip takers.** Disaggregated population data reveals age, race, ethnicity, income, employment status, and vehicle ownership status of trip takers.
- **Near-real-time insights.** Weekly trip data by mode and purpose, as well as seasonal data across all metrics down to the transit route and network link level.

